Resource Curse, Governance and Economic Growth in Algeria

BOUMEDIENE Mohamed Rachid [1], BENRAMDANE Anissa [2]

[1] Mohamed Benahmed University Oran 2, Algeria, boumediene.rachid@univ-oran2.dz

[2] Mohamed Benahmed University Oran 2, Algeria, dr.benra@gmail.com

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Abstract:

Natural resource abundance has traditionally been viewed as a positive factor for economic growth. According to empirical evidence, resource rich countries specially oil usually have lower rates of growth compared to resource poor countries. In development economies literature, this paradox is referred to as the « resource curse ». In this study, we try to test the resource curse hypothesis in Algerian economy applying a VAR model using annual data over the period 1970-2020.

Our results indicate that the negative growth effects of oil price volatility offset the positive impact of oil boom; therefore, we argue that oil price volatility and lower institutions quality, rather than oil abundance per se, drives the resource curse paradox in Algeria. Therefore, solutions should be diversify the Algerian economy.

Keywords resource curse, economic growth, oil price volatility, institutional quality, corruption.

JEL Classification Codes : C32, D73, O43, Q32, Q33.

***Corresponding author**: BENRAMDANE Anissa, **e-mail:** dr.benra@mail.com.*

1. INTRODUCTION

Before the late 1980s, the relationship between natural resource abundance and economic growth has been a controversial question among scholars and the extensive literature provided conflicting answers. The general belief was that natural resource abundance is a major advantage for a country attempting to achieve rapid economic development. Prominent development economists argued that natural resource endowments would enable countries to make the transition from underdevelopment to industrial take-of, as it had done for some of the advanced countries such as the United States, Australia and the United Kingdom. Similarly, Krueger (1980) argued that natural resources would facilitate a country's industrial development by providing investable funds and domestic market. Sachs and Warner (1999), Murphy and al. (2000) belief that natural resource richness must have a positive impact on economic growth, since resource- abundant economies are able to accumulate economic infrastructure and human capital more easily. Therefore, this range of literature called « resource blessing » show the positive side of natural resources and demonstrate their role in economic development and progress.

However, over the past three decades, the apparent notion that natural resource abundance leads to lower growth performance has attracted much attention. Several studies from the fields of economics and political science have pointed to the particularly strong negative economic and political impacts of natural resource abundance, especially oil.

Most of the empirical literature on the resource curse; paradox followed the influential work of Sachs and Warner (1995, 1997, 2001); such as Auty (1993), Gylfason (2000), Gylfason and Zoega (2003), Gelb (1988), Arezki and Van der Ploeg (2007), among many others who showed this negative relationship which was named « the natural resource curse » which was first introduced by Auty (1993). Depending to this paradox, plenty of natural resources increases the probability that countries will experience negative economic, social and political outcomes including poor economic performance, low levels of democracy and civil war - hence.

The « natural resource curse » hypothesis based on the observation that resource-rich economies grow slower, on average, than resource-poor economies Sachs and warner (1997-2001)**.** In recent times, economists and political scientists have advanced new theories to explain the disappointing growth performance of resource-rich countries.

The Dutch Disease explained in three theoretical models (Gregory 1976, Cordon 1984 and Edawards 1986) which show the existence of a negative impact of the boom in resource sector on the non-resource tradable sectors. The Disease been observed in Netherlands after the discovery of natural gas in the North Sea in 1960s.

Procyclicality in fiscal policy and volatility: the high volatility in the natural resource prices, affects negatively the economic growth in resource dependent countries (Aghion and Banarjee 2005, P.Collier and B.Goderis 2003, F.Van Der Ploeg and Poelhekke 2008…). Such volatility leads to the so-named « procyclicality » of fiscal policy: contractionary in bad times (when the resource receipts decline) and expansionary in good times (in a boom) (Kaminsky, Reinhart and Végh 2005, Havard Halland 2009, Frenkel 2012).

The third category of explanations also sees a connection between resources and institutions, and answers the question of why resource rents managed so poorly? In fact, Countries well endowed with point resources, then, areexpected to have ‘‘bad policies,’’ and suffer from the so-called rentier effects, repression effects, or policies that postpone the transition to competitive industrialization and diversification of the economy. Ross (1999), Mehlum and Torvik (2005) and Auty (2001) argues that resource-rich countries with good institutions and good politicians perform better.

It accepted that oil has been vitally important to the global economy and the world has experienced growth in oil consumption for the majority of years since the early 1900s. In all probability, this trend will continue with the majority of the growth coming from the emerging economies-hence the global importance of oil is likely to continue.

Many oil rich counties have experienced large windfall gains because of a rise in international oil prices. These accumulated gains are often associated

with potential macroeconomic volatility that reliance on oil can introduce into the economy. Furthermore, many oil-exporting countries are relatively poor in terms of social development indicators and economic welfare such as Algeria.

Oil and Gas Journal (OGJ) estimates reveals that Algeria held approximately 12.2 billion barrels of proven oil reserves as of January 2012, the third largest reserves in Africa. Further, Algeria ranked the eighth largest natural gas producer in the world in 2010 and the third largest gas supplier to Europe.

Hydrocarbons sector is the locomotive of the Algerian economy, this sector contributes significantly to government revenues and it is the principal actor of economic growth. It employed just 3 per cent of the active population but generated 40 per cent of GDP and 98 per cent of export earnings in 2014.

Therefore, in this study, we try to test the resource curse hypothesis in Algerian economy applying multivariate co-integration approach VECM and VAR model based on the advances in time series econometrics, to examine short-run, long run and joint causality relationships using annual data over the period 1970-2020.

Algerian economy seems one of the second body of the literature establishes that confirm the negative relationship between resource abundance and poor economic performance.

1. The explanation of natural resource curse :

The idea that natural resources might be more an economic curse than a blessing began to emerge in the 1980s. The term *resource curse thesis* , also known as the paradox of plenty, was first used by Richard Auty in 1993 to describe how countries rich in natural resources, specifically point-source non-renewable resources like minerals and fuels, were unable to use that wealth to boost their economies and how, counter-intuitively, these countries had lower economic growth than countries without an abundance of natural resources. Numerous studies, including one by Jeffrey Sachs and Andrew Warner, have shown a link between natural resource abundance and poor economic growth.

Here we discuss the theoretical support and evidence where available for a wide range of hypotheses about the effects of natural resources abundance on the economy growth. The mechanisms through which the resource curse works remain rather unclear. Economic explanations, most notably the Dutch Disease (e.g. Corden 1982; Corden and Neary 1982; Sachs 2007) and the more recent volatility view (e.g. Gelb and Grasmann 2008); have been questioned in the recent literature (Elbadawi and Gelb 2010). On the contrary, the political economy view of the curse has received ample support in the recent empirical growth literature, which finds that the existence of the curse is conditional on bad governance (e.g. Collier and Goderis 2009; Arezki et al. 2011).

1.1. Dutch disease: natural resource windfalls cause de-industrialization :

The term Dutch Disease was first coined in an article in the magazine « The economist » in 1977 after the discovery of natural gas in the North Sea by the Netherlands in 1960s, such discovery raised the Dutch exports of the natural gas while the manufacturing sector has known a slop in its production and employment. The economic concept of Dutch Disease refers to the potential negative effects natural-resource windfalls and accompanying appreciations of exchange rates can have for the rest of the economy. One of the potential dangers of oil booms, for example, is that exchange-rate appreciation renders the non-oil-tradable sectors such as manufacturing less competitive and thus can generate de-industrialisation.
The mechanism is that an increase in revenues from natural resources (or inflows of foreign aid) will make a given nation's currency stronger compared to that of other nations (manifest in an exchange rate), resulting in the nation's other exports becoming more expensive for other countries to buy, and imports becoming cheaper, making the manufacturing sector less competitive.

The classic economic model describing Dutch Disease developed by the economists W. Max Corden and J. Peter Neary in 1982. In the model, there is a non-tradable sector (which includes services) and two tradable

sectors: the booming sector, and the lagging (or non-booming) tradable sector. The non-traded good typically thought to produce by the service sector (but it can extended to the construction sector, etc), a resource boom affects the rest of the economy in two main ways: the « resource movement effect » and the «spending effect ».

The resource movement effect : an increase in energy price raises the value of the marginal product of labour in the energy sector and pushes the equilibrium wage rate up, bringing about a movement of labour from both the manufacturing and non-tradable sectors to the energy sector. The result is a tightening of the other tradable sectors.

The spending effect : a boom in the natural resource sector, caused either by a rise in the world price of the resource or by a new deposit discovery, leads to increased income for the country which, in turn, brings about increased imports and domestic absorption for both tradable and non-tradable. Inasmuch as the prices of tradable are set internationally, this effect results in increasing prices (and wages) of non-tradable relative to tradable, i.e. a real appreciation of the exchange rate. In addition, it bids labour and capital out of the manufacturing sector.

This is what we could refer to as the active or long-term Dutch Disease: economic growth is damaged in the end because non-commodity manufacturing is hollowed out. In the short run, even if non-oil manufacturing activity is maintained, economic fluctuations may remain strong due to commodity price fluctuations, simply because of swings in commodity-related activities. The lower the share of the commodity-producing sector in GDP, the smaller the overall economic fluctuations due to the short-term or pas-sive Dutch Disease.

2.2. Volatility of commodity prices: New channel for the resource curse :

Most of commodities characterized with high volatility where the world markets prices for oil and natural gas are the most volatile. This volatility issue affects developing countries rather than industrialized ones, typically economies rich in such resources; that is, the cyclical variability pronounced in resource rich countries is due to the magnitude of swings in

commodity prices particularly oil. Moreover, many authors treated this volatility as a new channel to explain the weak economic performance and growth volatility in those countries.

The literature on oil price volatility and its attendant consequence on economic growth are quite broad and continue to expand. As Adelman (2000) notes that though oil price movements have always occurred mainly due to seasonal changes in demand, such movements were small. For example, between 1998 and March 2000 international oil prices rose from $10 to $31 per barrel, it further rose to $37 in September 2000, before declining to less than $18 per barrel in November 2001. Since then there has been an upward movement in the prices of crude oil reaching about $147 per barrel in 2008, before averaging $90 per barrel in 2010. He adduces this volatility of crude oil prices to the fixation of prices by collusion in the OPEC cartel and the unrest in the Middle East at various times. This variability in the prices will lead to short-run and long run challenges. In the short term, the concerned countries find difficulties to conduct their macroeconomic policies. Thus, they will experience lower rates of economic growth in the end.

Olsen and Flo (1992) on Oil price volatility and its impact on key growth variables of economies, their results indicate that oil price volatility may trigger an external inflation spike, they assert that inflation results from oil price fluctuations and not an increase in domestic money supply.

Lee (1998) defined volatility as the standard deviation in a given period. She submitted that both have negative impacts on economic growth, but in different ways: Volatility has a negative and significant impact on economic growth immediately, while the impact of oil price changes delays until after a year.

Olaokun (2000), in a related study, arrived at some interesting conclusions; he showed that oil price increases exerts a negative effect on the economies of Ghana and Nigeria (although the later is an oil-producing country), but has a positive effect on Russia.

Blatman Hwang and Williamson (2007), in their examination of the growth performance of 35 countries over the period 1870- 1939, concluded that

countries specialized in commodities with substantial price volatility have more volatility in their terms of trade, less foreign direct investment and experience lower growth rates than countries specialized in more stable prices and industrial leaders.

The events of the 1970s, the first oil shock, show to the world that oil price cycles are unpredictable and that oil prices are volatile, this can create large swings in resource dependent economies namely macroeconomic volatility particularly fiscal policy. Knowing that in oil-exporting economies, fiscal policy is closely linked to the performance of the oil sector. The resulting high volatility in government revenues often leads to pro-cyclical government expenditures in these countries, which affect the countries short-run economic performance and possibly its long-term growth.

Kaminsky, Reinhart and Végh (2005) defined the procyclical fiscal policy in terms of policy instruments (government spending and tax rates) and they argued that this situation involves higher (lower) government spending and lower (higher) tax rates in good (bad) times; that is, fiscal policy is expansionary in good times and contractionary in bad times. According to them, the policy is procyclical because it tends to reinforce the business cycle.

Three important characteristics of commodity exporting countries are likely to make government spending more pro-cyclical:

- government revenues derived from the exploitation of natural resources are more volatile than other sources of government revenues;
- the size of the resource revenues is disproportionally large in commodity exporting countries;
- Those revenues are prone to rent seeking behavior.

Moreover, Alan Gelb (1988) argued that governments in these countries often embark on large investment projects, which take form of « white elephants » projects, following commodity price booms.

Bleany and Halland (2009) introduced the concept of fiscal policy volatility as a transmission mechanism for the resource curse. Using a sample of 75 countries over the period 1980-2004, they argued that countries with a

higher share of natural exports tend to have both slower per capita growth and higher volatility of output and government consumption. They found that both output volatility and fiscal policy volatility have negative effect on economic growth.

Arezki and Gylfason (2011) used a new dataset to examine the impact of commodity price volatility on economic growth in a panel of up to 158 countries, the data covered the period 1970-2007. To do so, they estimated a dynamic econometric model using generalized method of moments (GMM) system. They concluded that an increased commodity price volatility leads to a significant increase in non-resource GDP growth in democracies but no significant effect on growth in autocracies; and an increase in commodity price index volatility leads to a large and statistically significant increase in net national saving in democracies while net national saving decreased significantly in autocracies, which means that changes in commodity prices encourage saving in democracies.

2.3. Institutionnel Explanations :

Beyond the economic explanation of the natural resource curse, the question that matters: why governments in resource rich countries manage their revenues so poorly? This question gives role to the quality of institutions and governance.

It is argued that considering the increase in potential petroleum generated revenues, good institutions can help in economic growth and bad institutions may bring curse and weak performance of petroleum rich economies.

Governments and political systems represent a crucial channel through which the resource rents may affect economic growth either positively or negatively. Empirical support for this view is provided by various authors, including Ross (1999, 2001a), Leite and Weidmann (2002), Sala-i-Martin and Subramanian (2003), Isham et al. (2005), and Bulte et al. (2005), Jensen and Wantchekon (2004) and Robinson et al. (2006).

Acemoglu (2003) has shown that good institutions encourage investment in machinery, human capital and better technologies, which lead to achieve

economic prosperity. In this context, according to Acemoglu, good institutions have three key characteristics:

- Enforcement of property rights ;
- Constraints on the actions of politicians and other powerful groups ;
- A degree of equal opportunity among individuals to participate in economic activities.

Mehlum et al. (2006) demonstrate that the impact of resource abundance is conditional on institutional quality, i.e. while countries with good institutions, which promote accountability and state competence, will tend to benefit from resource abundance, countries without such institutions may suffer from a resource curse. With grabber friendly institutions more natural re-sources push aggregate income down, while with producer friendly institutions more natural resources increase income. Such a theory finds strong support in data.

Along with these transmission channels, another feature that has emerged in the resource curse literature is the link between resources and conflict pioneered by empirical contribution in Collier and Hoeffler (1998).

3. Methodology and Results :

3. 1. Data :

The variables used are as follows : real GDP per capita defined as GDPC at constant price ; Oil price volatility Oilvol measured by conditional variance of oil price shocks : ARCH(1) Model ; Unemployment UNE measured as percentage of labour force ; Inflation rate INF as measured by the percentage changes of consumer price index (CPI ; 2005=100) ; Real effective exchange rate (REER ; 2005=100) ; Money Supply M_2 ; Government expenditure (GS) oriented to consumption as a percentage of GPD ; Investment (INV) as a share of GDP ; Corruption index (corrup) ; Democracy index (demo).

The data for GDPC; UNE; INF; are obtained from International Monetary Fund IMF; Oil price from OPEC Annual Statistical Bulletin 1999-2013. INV; GS and M2 from World Bank; Corrup and demo from Polity IV Project (2012). The time span covered by the series is from 1970 to 2020. All series expressed in logarithmic form.

3.2. Results and Discussion :

3.2.1. Unit root test and VAR model estimation :

The first step of our methodology is to test the order of integration that is the stationary of our variables, the Augmented Dickey-Fuller (ADF) test (Dickey and Fuller, 1981), Philips-Perron (PP) test (1988) and Kwiatkowski–Phillips–Schmidt–Shin (KPSS) test (1992). Unit Root tests for all the variables are presented in table 1.

Table 1. Unit root test

		ADF*		PP*		KPSS*		Decision
		Level	1st dif	Level	1st dif	level	1st dif	
GDPC	Intercept	0.71	0.000	0.72	0.000	0.82	0.15	I(1)
	Intercept+trend	0.63	0.002	0.74	0.002	0.083	0.07	
INF	Intercept	0.24	0.000	0.21	0.000	0.14	0.07	I(1)
	Intercept+trend	0.51	0.000	0.47	0.000	0.12	0.05	
UNE	Intercept	0.007	0.000	0.007	0.000	0.11	0.11	I(1)
	Intercept+trend	0.009	0.000	0.009	0.000	0.12	0.12	
M_2	Intercept	0.40	0.000	0.33	0.000	0.13	0.07	I(1)
	Intercept+trend	052	0.005	0.63	0.006	0.08	0.07	
REER	Intercept	0.92	0.006	0.94	0.008	0.72	0.8	I(1)
	Intercept+trend	0.30	0.020	0.65	0.030	0.12	0.13	
INV	Intercept	0.005	0.000	0.007	0.000	0.30	0.36	I(1)
	Intercept+trend	0.19	0.000	0.02	0.000	0.16	0.41	
GS	Intercept	0.11	0.000	0.12	0.000	0.33	0.11	I(1)
	Intercept+trend	0.15	0.000	0.15	0.000	0.07	0.07	
Corrup	Intercept	0.74	0.000	0.74	0.000	0.43	0.17	I(1)
	Intercept+trend	0.53	0.000	0.52	0.000	0.46	0.14	
Demo	Intercept	0.67	0.000	0.69	0.000	0.50	0.16	I(1)
	Intercept+trend	0.52	0.000	0.45	0.000	0.73	0.34	

*P value at 5%.

Source: prepared by the researcher – output software Eviews.

The three tests show similar results that all the nine variables of the model are not stationary at level, but they all stationary at first difference I(1). So the series is integration of same orders except the volatility of oil price which is stable in the original I (0).

In order to test the potential impact of the volatility of oil prices on the rest of the economic and institutional variables, we rely on Vector Autoregressive model VAR – with one lag.

The result of GDPC equation showed significant and negative relation between GDPC and first lag of Oilvol, demo and corrup. There is also

significant and positive relation between GDPC and fisrt lag of GS and INV. The R^2 shows the model of this equation explains about 0.99% variations in GDPC.

The coefficients from the estimates VAR are not of primary interest in this empirical work. Rather, we focus on the impulse response function IRF and variance decomposition VDC generated from the VAR model.

3.2.2. Variation decomposition VD :

Variance decomposition shows the proportion of the forecast error variance of a variable that is attributable to its own innovations and other variables. Since we are primarily interested in how different macroeconomic variables respond to oil price volatility shocks.

The results presented in table 3 shows the variance decomposition for different variables attributable to oil volatility shocks.

Table 2. Variance decomposition

Period	GDPC	GS	INV	INF	REER	UNE	M_2	DEMO	CORRUP
1	0	3.79	2.23	1.27	0.01	9.07	0.12	1.58	1.66
5	16.27	3.82	11.06	11.21	2.31	15.76	1.92	7.86	2.28
10	19.14	5.73	11.46	9	7.54	18.63	7.31	9.37	4.89

Period	oilvol	GDPC	GS	INV	INF	REER	UNE	M_2	DEMO	CORRUP
1	76.29	100	66.61	62.49	81.63	71.75	52.44	25.93	84.75	76.08
5	50.11	70.68	50.80	44.39	53.93	15.87	16.75	9.59	52.35	27.04
10	45.02	59.72	43.49	41.29	43.29	5.76	14.24	7.96	48.58	14.21

Source: prepared by the researcher – output software Eviews.

The result of VD in table 3, presented that the largest source of shocks was changes in oilvol itself, which contributed about 76.29% in the first year declining to 50.11% in the 5^{th} year to 45.02% in the end.

For the GDPC, the largest source of shocks was changes in GDPC itself, which contributed about 100% in the first year, declining to about 59.72% in the end. The contribution of oil price volatility shock to GDPC was nil in

the first year, rising to 16.27% in six year and about 19.14% in the 10th year. The implication of this finding is that oil prices volatility shocks des significantly affect GDPC in Algeria in the long-run more than the short run. In addition, confirms the significant contribution of the oil revenue in supporting the growth in Algeria.

For the GS, the largest source of shocks was changes in GS itself, which contributes about 66.61% in the first year, declining to 50.80% in six year and about 43.49% in the 10th year. The contribution of oil prices volatility shocks to GS was 3.79% in the first year, rising to 5.73% in the last. Shock in GDP per capita explain about 29.58% of the changes in the short term and 17.16% in the long run, the inflation shock explain changes about 9.83% in the long run. Administration bureaucratic and corruption explain 5.53% and 4.23% of the fluctuations in public expenditure in the long term. Therefore, these results support the hypothesis of procyclicity of fiscal policy in Algeria, caused by institutional weakness.

Shocks in oil prices volatility had not any impact on the real exchange rate in the short run, because the exchange rate fluctuations due to change in REER itself, but in the end, oil price volatility explained about 7.54%. Whereas, shocks in GDPC explained about 19.48% of changes in REER at the short run, while 58.98% in the end. This finding confirm that REER fluctuation in Algeria follows the economic situation of the country.

Oil prices volatility explained 9.07% to change in unemployment in the first year, rising to about 18.63% in the tenth year. This finding confirms that oil price volatility may not be necessarily unemployment contrary to findings by Gunnu Umar and Kilishi (2010).

3.2.3. Impulse Response Function IRF:

An impulse response function traces the effects of a one-time shock to one of the innovations on current and future values of the endogenous variables. If the innovations ET are contemporaneously uncorrelated, the interpretation of the impulse response is straightforward. The i the innovation $\varepsilon_{i,\, t\ is}$ simply a shock to the i the endogenous variable $y_{i,\, t}$. contain the impulse response functions for the responses of the macroeconomic variables to different oil price shocks. Each figure traces the effect of a one-

time shock to the measures of oil shocks on the current and future values of each of the macroeconomic variables.

Annex two shows impulse response function of macroeconomic variables (GDPC, UNE, INF, REER, INV, and M2) and institutional variables (DEMO and Corrup) sudden change rate of one standard deviation in each of oil prices volatility.

Is clear from figure 1 that the oil prices volatility have a positive effect on GDPC and the effect lasts for three years, so that any sudden 1% changes in the Oilvol affect GDPC, but after the three years this effect become negative.

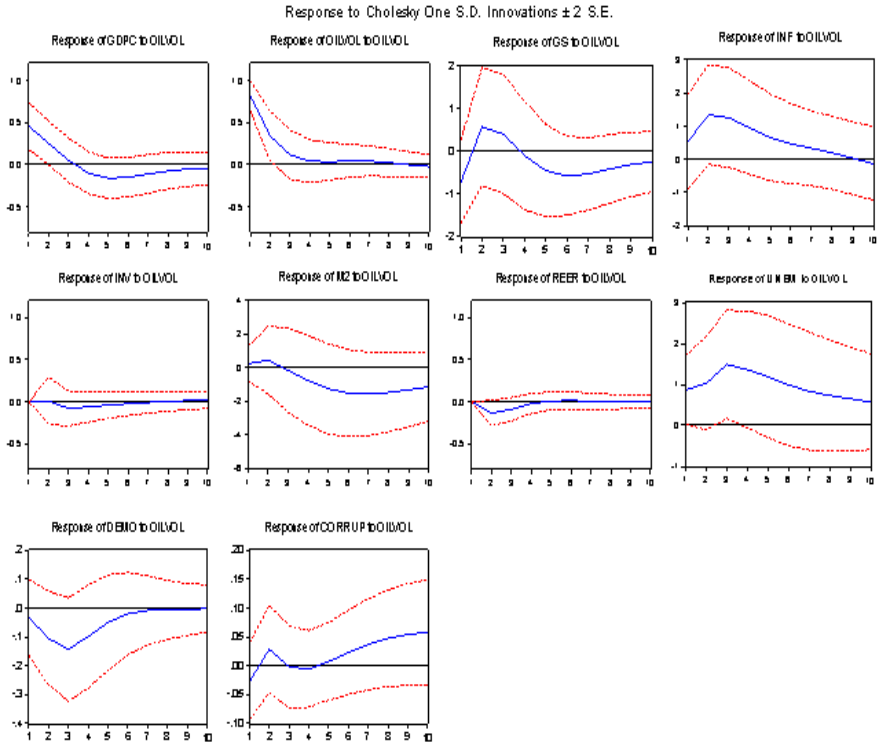
The response of public expenditures GS, the result of IRF showed that oil prices volatility affect the GS negatively in the first six months of the first year and then become positive until the fourth year and then became negative after that, and this confirms the lack of procyclicity of fiscal policy.

The response of unemployment, the result of IRF showed the oil price volatility affect the unemployment positively and the effect lasts for the rest of years, but the impact is indirect, so at low investment rate and GDPC, unemployment rates are high.

As for the changing oil prices volatility on inflation, the impact was positive during the eight years, and this result was compatible with the results of previous tests.

The response of reel effective exchange rate to shocks in oil prices volatility is mixed, the fourth year show a negative response of REER to oil shocks, then disappears and then become small and positive. This means that the oil price volatility did not affects the REER in the short run but in the end. In addition, the money supply response to oil prices volatility is positive during the first two years and become negative after that, this confirms the fact that Algeria does not suffer from the Dutch Disease because the state controls the exchange rate process in accordance with the prevailing conditions and not changes in oil prices.

Figure 1. Impulse response function



Source: prepared by the researcher – output software Eviews.

The response of corruption to shocks in oil price volatility is volatile, where it was negative in the first half for the first time and become positive over the two periods, then negative for a period and positive after that, As for the democracy, the effect was negative over six periods becoming nil after that, this means that a positive shocks in the oil prices volatility lead to an outbreak of the bureaucracy in Algeria at the expense of democracy.

3.2.4. Granger causality tests:

The Granger causality tests show the direction of co-integrated relation, results are presented in Table 4, and it can seen that for GDPC, UNE, INF, REER, GS, INV, M_2, corrupt and demo.

Table 3. Granger causality**.**

Causality direction	Prob
OILVOL → GDPC	0.0090
OILVOL → GS	0.0780
OILVOL → INF	0.0004
OILVOL → INV	0.6972
OILVOL → REER	0.6002
OILVOL → UNEM	0.0065
OILVOL → M_2	0.3393
OILVOL → DEMO	0.0210
OILVOL → CORRUP	0.0435

Source: prepared by the researcher – output software Eviews.

Pair wise Granger causality tests were conducted, the results are presented in table 3. At 5% significance level, there are evidences that oil prices volatility granger caused GDPC, INF, UNEM, DEMO and Corrupt, other granger causalities between oilvol and other macroeconomic variables are not statistically significant.

We find volatility exerts a negative impact on economic growth in Algeria. Our results indicate that the negative growth effects of commodity terms of trade volatility offset the positive impact of commodity booms. Therefore, we argue that volatility, rather than abundance per se, drives the "resource curse" paradox in Algeria.

4. Conclusion and recommandation :

The main objective of this paper is to investigate the impact of oil price volatility on the economic growth in Algeria showing the evidence of the natural resource curse puzzle in the Algerian economy during the period 1970-2020 where the government has adopted new reforms to well manage its oil revenues and benefit from the recent international oil boom.

The study based on the different explanations of the resource curse thesis which suggests a negative association between natural resource endowment and economic growth through the Dutch Disease; procyclicality of fiscal policy and price volatility and institutional quality.

The Algerian economy as one of the most important producers of oil and gas is not immune to the existence of oil curse. Algeria has yet to rid itself of an exclusive reliance on primary sector exports to generate growth and wealth. This has simultaneously created a dangerous dependency on importation to meet local demand.

The policies and reforms adopted in Algeria since the year 2000 under the management of oil windfalls were not sufficient to escape the national economy from the oil dependence; and the institutional environment is the key constraint against the success.

The empirical contribution of this work, showed the presence of two channels of the impact of oil abundance on economic growth and not a single channel, the first channel represents the direct positive impact through the influence of oil abundance on investment and trade openness, this leads to the boost economic growth. The importance of oil revenues illustrated through the improvement in some of macroeconomics and socials indicators, as: growth in GDP, lower inflation, decline in the unemployment rate and decline in volume of foreign debt.

Our results indicate that the negative growth effects of oil price volatility offset the positive impact of commodity booms. Therefore, we argue that volatility and mismangement, rather than abundance per se, drives the "resource curse" paradox in Algeria.

Algeria should make Improvements in the conduct of macroeconomic policy, better management of resource income volatility through Sovereign Wealth Funds (SWF) as well as stabilization funds, a suitable exchange rate regime, and export diversification can all have beneficial growth effects. Moreover, recent academic research has put emphasis on institutional reform. By setting up the right institutions, one can ensure the proper conduct of macroeconomic policy and better use of resource income revenues, thereby increasing the potential for growth.

References

1) ***Acemoglu D****. 2003, a historical approach to assessing the role of institutions in economic development, root causes, International Monetary Fund.*

2) ***Adelman, A.****, 2000. Determinants of growth and development of the Australian economy. Australian journal of Economics, 14(3): 19-21, 28, And 34, And 42, and and 14(3): 19-21, 28, 34, and 42.*

3) ***Alan Gelb****. 1998, Oil Windfalls: Blessing or Curse? Published by World Bank/Oxford University Press.*

4) ***Arezki R. and Gylfason T****. 2011, Commodity price volatility, democracy and economic growth, CESifo working paper n°3619.*

5) ***Arezki Rabah.****2010, Fiscal policy in commodity exporting countries: stability and growth, High-Level Seminar on Natural Resources, Development, and Finance: Existing and New Challenges, at Algeria, November4-5.*

6) ***Bleany M. and Halland H.*** 2009*, the resource curse and fiscal policy volatility, CREDIT research paper No. 09/09.*

7) ***Bravo-Ortega, C., J. De Gregorio, and D. Paraguay****. 2005. The relative richness of the poor? Natural resources, human capital, and economic growth. The World Bank: Policy Research Working Paper Series*

8) ***Brunnschweiler, C. N. and E. H. Bulte****. 2008. The resource curse revisited and revised a tale of paradoxes and red herrings. Journal of Environmental Economics and Management 55(3): 248–64.*

9) ***Bulte, E. H., R. Damania, and R. T. Deacon****. 2005. Resource intensity, institutions, and development. World Development 33(7): 1029–4*

10) ***Cavalcanti, T., K. Mohaddes, and M. Raissi****. 2011. Does oil abundance harm growth? Applied Economics Letters. Forthcoming.*

11) ***Collier, P. and Hoeffler, A****. 1998, On Economic Causes of Civil War. Oxford Economic Papers, 50, 563-73.*

12) ***Gunu Umar****., & Kilishi, A. A. (2010). Oil prices and the terms of trade. International Journal of Business and Management, 5(8), 39-49.*

13) ***Isham, Pritchett, J.L., Woolcock, M. and Busby, G****. 2005, The Varieties of Resource Experience: Natural Resource Export Structures and the Political Economy of Economic Growth, World Bank Economic Review, 19, 141-174.*

14) ***Kaminsky G, Reinhart and Végh****. 2005. "When it rains, it poors", National Bureau of Economic Research, April 2005.*

15) ***Lee, K.,*** *1998. Oil price changes and volatility; a correlation analysis on the economy of china. Scholarly writer's publications, 15(4): 44-49.*

16) ***Leite, C. and Weidmann, J****. 2002, Does Mother Nature Corrupt? Natural Resources, Corruption and Economic Growth, Edited by G. Abed and S. Gupta, Governance, Corruption and Economic Performance, International Monetary Fund, Washington, DC.*

17) ***Mehlum, H., Moene, K. and Torvik, R****. 2006, Institutions and the Resource Curse, Economic Journal, 116, 1-20.*

18) ***Olaokun, O.,*** *2000. Oil price shock effects on economies of African nations. African Economic Journal, 3(10): 30-39.*

19) ***Olsen, H. and F. Flo****, 1992. Oil price variation effects on economic growth prospects of Norway. Scandinavian Research Journal, 10(2): 21-25, 35, 42, 44.*

20) ***Sachs, J. and A. Warner.*** *1995. Natural resource abundance and economic growth. NBER Working Paper No. 5398.*

21) ***Sala-i-Martin, X. and Subramanian, A****. 2003, revised 2013, Addressing the Natural Resource Curse: An Illustration from Nigeria, Journal of African Economies, Centre for the Study of African Economies (CSAE), 22 (4), 570-615.*

22) ***Syrous K. K., Ayser Phillip S., & Marjorie S****. (2006). The Impact of Oil Prices on Employment. International Research Journal of Finance and Economics, 5, 136-154.*

23) ***Tornell, A., Lane, P.R****., 2001.Are windfalls a curse? J.Int.Econ.44, 83–112.*

24) ***Torvik, R.*** *2002, Natural resources, rent seeking and welfare. Journal of Development Economics, 67, 455–470.*

25) ***Van der ploag F., Poelhekke S.****, Volatility and natural resource curse, university of Oxford, 2008.*

26) ***Maghribi,*** *(2016), The economics of water resources in Algeria, an analytical study of water resources (potentials and challenges). Revue Les Cahiers Du POIDEX, 5(2), 103-120. Arabic https://www.asjp.cerist.dz/en/downArticle/195/5/2/30157*

27) ***KACI, N****. (2020). L'ouverture commerciale : Quels défis et perspectives pour l'économie algérienne ?. Revue Les Cahiers Du POIDEX, 9(2), 80-97. https://www.asjp.cerist.dz/en/downSomaitepdf/195/9/2/139549*